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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,396	02/09/2004	Hiroaki Sudo	P24788	6607
7055 7590 01/09/2008 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER LY, ANH VU H	
			ART UNIT 2616	PAPER NUMBER
			NOTIFICATION DATE 01/09/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

**Office Action Summary**

Application No.

10/773,396

Applicant(s)

SUDO ET AL.

Examiner

Anh-Vu H. Ly

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 and 10 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 11 is/are rejected.
- 7) ☒ Claim(s) 8 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. This communication is in response to Applicants' amendment filed October 23, 2007.  
Claims 1-13 are pending.

### *Claim Objections*

2. Claims 8 and 11 are objected to because of the following informalities:  
  
With respect to claim 8, in line 3, replace "a part of the first valid symbol" with --a part of a first valid symbol--.  
  
With respect to claim 11, in line 3, replace "a part of a second valid symbol to be transmitted" with --a part of a second valid symbol to the second valid symbol to be transmitted--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4-7, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larsson, Roger (W0 97/30531). Hereinafter, referenced as Larsson.

With respect to claims 1, 6, and 11, Larsson discloses a method of setting a guard interval in an OFDM communication (Fig. 5), comprising:

attaching a part of a first valid symbol to the first valid symbol as a guard interval (page 3, lines 23-26, the transmitter being adapted to transmit data in OFDM symbol bursts in which a portion of a symbol burst is repeated within the symbol burst as a guard space. Herein, a portion of a first symbol burst is repeated within the first symbol burst as a guard space);

attaching a part of a second valid symbol to be transmitted after the first valid symbol is transmitted to the second valid symbol as a guard interval (page 3, lines 23-26, the transmitter being adapted to transmit data in OFDM symbol bursts in which a portion of a symbol burst is repeated within the symbol burst as a guard space. Herein, a portion of a second symbol burst is repeated within second symbol burst as a guard space. First and second symbol bursts are valid OFDM symbol bursts of a transmitted data transmitted by the transmitter).

Larsson does not explicitly disclose that the second valid symbol requiring higher channel quality than the first valid symbol and providing the guard interval of the second valid symbol at a length greater than the guard interval of the first valid symbol. However, Larsson discloses that the transmitter may be adapted to receive a control signal, from a receiver, indicative of the amount of delay spread present in a received signal, and to use this signal to adjust the duration of the guard space, on a continuous basis (page 8, lines 27-32. Herein, the received signal is considered as the first symbol burst and latter received signal with the adjusted guard space is the second symbol burst and wherein the adjusted guard space can be expanded guard space or reduced guard space). It would have been obvious to one having ordinary skilled in the art at the time the invention was made to increase the guard space of latter OFDM symbols to be transmitted, according to the feedback information from the receiver, to compensate and

avoid interference, delay spread, and multi-path fading, as a function of reducing channel traffic capacity.

With respect to claim 2, Larsson discloses maintaining the length of the first valid symbol and second valid symbol (Fig. 5, a representation of OFDM symbol bursts with symbol time  $T_s$  and guard time  $T_g$ ).

With respect to claim 4, Larsson discloses changing the length of the guard interval of the first valid symbol in accordance with channel quality (page 8, lines 27-32, the transmitter may be adapted to receive a control signal, from a receiver, indicative of the amount of delay spread present in a received signal, and to use this signal to adjust the duration of the guard space, on a continuous basis. Herein, the guard space of the first symbol in the received signal is modified according to the delay spread).

With respect to claim 5, Larsson discloses maintaining the length of the guard interval of the second valid symbol (Fig. 5, the length  $T_g$  must be maintained for the second OFDM symbol burst).

With respect to claim 7, Larsson discloses forming the guard interval of the second valid symbol by attaching a length that changes in accordance with the channel quality of the guard interval of the first valid symbol (Fig. 5,  $T_g$  is the new  $T_g$  according to the feedback from the receiver for the second OFDM symbol).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larsson in view of Weck (US Patent No. 6,115,354). Hereinafter, referenced as Larsson and Weck.

With respect to claim 3, Larsson discloses variable guard space in OFDM symbol bursts. Larsson does not disclose inserting user data in first valid symbol and inserting control data in second valid symbol. Weck discloses inserting user data in first symbol and inserting control data in second symbol (Fig. 1, first symbol is the active OFDM symbol carrying user data and the second symbol is the reference symbol carrying control data). It would have been obvious to one having ordinary skill in the art at the time the invention was made to insert user data and control data into OFDM symbols for transmission in Larsson's system, as suggested by Weck, for controlling data transmissions.

*Allowable Subject Matter*

5. Claim 8 contains the allowable subject matter but objected to for minor informalities.

6. Claims 9-10 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or fairly suggest changing the length of the guard interval of the first valid symbol in accordance with channel quality while maintaining the length of the guard interval of the second valid symbol, as specified in independent claim 8.

The prior art does not teach or fairly suggest providing the guard interval at a greater length when the valid symbol of retransmission information requires higher quality, as specified in independent claim 9.

The prior art does not teach or fairly suggest providing a guard interval of a valid symbol including retransmission information for control data a length greater than a guard interval of a valid symbol including user data, as specified in independent claim 10.

7. Claims 12-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

8. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

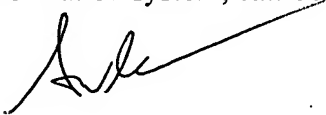
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh-Vu H. Ly whose telephone number is 571-272-3175. The examiner can normally be reached on Monday-Friday 7:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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